

Dear Family,

We are half-ways done with the course. Just a reminder, that students can still turn in missing work and redo assessments, but it must be done soon. Students do not forever to complete this. Arrangements need to be made sooner than later.

In this unit, your child will learn about similarity. Figures that are similar have the same shape but not necessarily the same size. Your child will begin the lesson with a discussion about ratios and proportions in polygons. They have studied similar shapes since third grade, so they should have a lot of prior knowledge. Because students have had at least some prior work with similar shapes, this a relatively short unit.

Your child will also compare polygons.

Two conditions must be met for two polygons to be similar.

1. The corresponding angles must be congruent.

2. The corresponding sides must be proportional.

Consider the polygons shown here. The following are true about these two polygons:

$$\angle A \cong \angle E$$

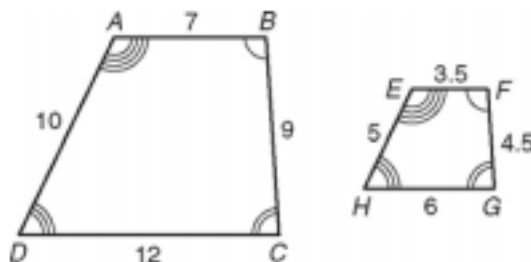
$$\angle B \cong \angle F$$

$$\angle C \cong \angle G$$

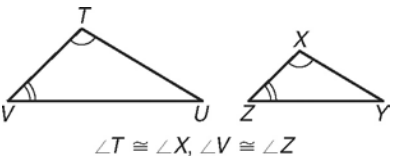
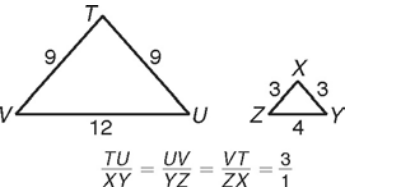
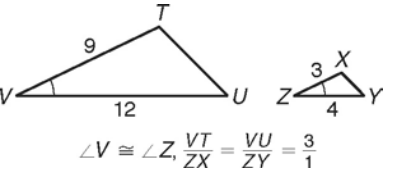
$$\angle D \cong \angle H$$

$$\frac{AB}{EF} = \frac{BC}{FG} = \frac{CD}{GH} = \frac{DA}{HE} = \frac{2}{1}$$

Therefore, these two figures are similar.



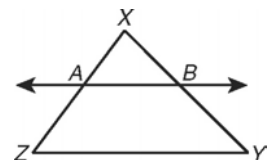
Your child will also learn a postulate and two theorems that can be used to decide whether triangles are similar. These are stated in the table.

Postulate or Theorem	Example	Conclusion
<b>Angle-Angle Similarity</b> If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.	 $\angle T \cong \angle X, \angle V \cong \angle Z$	$\triangle TUV \sim \triangle XYZ$
<b>Side-Side-Side Similarity</b> If the three sides of one triangle are proportional to the three corresponding sides of another triangle, then the triangles are similar.	 $\frac{TU}{XY} = \frac{UV}{YZ} = \frac{VT}{ZX} = \frac{3}{1}$	$\triangle TUV \sim \triangle XYZ$
<b>Side-Angle-Side</b> If two sides of one triangle are proportional to two sides of another triangle and their included angles are congruent, then the triangles are similar.	 $\angle V \cong \angle Z, \frac{VT}{ZX} = \frac{VU}{ZY} = \frac{3}{1}$	$\triangle TUV \sim \triangle XYZ$

Similar triangles and other geometric figures can also be drawn in the coordinate plane. Your child will draw and describe dilations of polygons and determine whether the polygons are similar.

Your child will learn some of the more practical uses of the properties of similar triangles and other proportional relationships. For example, artists use the properties of similar triangles in perspective drawings. They may use the Triangle Proportionality Theorem in their work.

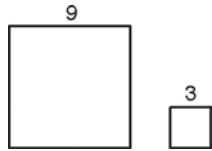
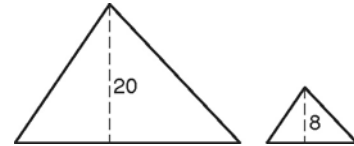
Artists know that to create perspective drawings, certain relationships must be maintained. In this figure,  $\overline{AB} \parallel \overline{ZY}$ , so  $\frac{XA}{AZ} = \frac{XB}{BY}$ . This is true when a line is parallel to a side of a triangle.



The use of a scale in drawings also reflects proportional relationships. The scale of a drawing is the ratio of any length in a drawing to the corresponding actual length. The following figures are proportional, and your child will learn to determine the scale that can be used to compare them.

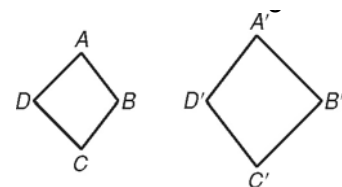
Scale is written as a ratio, so the scale for these two triangles is 5 : 2.

The scale for these two squares is 3 : 1.



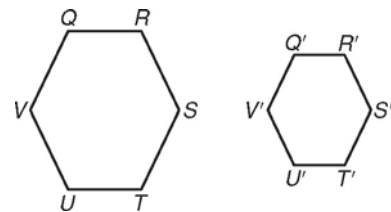
Your child will also learn that figures can be enlarged or reduced through transformations called dilations.

The polygon on the right is an enlarged version of the polygon on the left.



The polygon on the right is a reduced version of the polygon on the left.

The following are the assignments and the assessments for this unit. As a reminder the actual dates when the assignments are assigned can be found on the [assignment calendar](#) on my [school webpage](#). This can be found under classrooms on the [high school webpage](#).



7-1 Ratios in Similar Polygons (p 469) 7-11, 14, 20, 25, 26.

7-2 Similarity and Transformations (p 477) 14-18, 21-24.

7-3 Triangle Similarity: AA, SSS, & SAS (p 487) 11-19, 23, 26, 32, 33.

7A Ready to Go On & posttests.

Chapter 7 Quiz 1.

7-4 Applying Properties of Similar Triangles (p 499) 8-14, 16, 20-22, 26, 31-35.

7-5 Using Proportional Relationships (p 505) 12, 15, 17-20, 28, 31, 38, 40.

7-6 Dilations and Similarity in the Coordinate Plane (p 513) 10-16, 18, 20.

7B Ready to Go On & posttests

Chapter 7 Quiz 2.

Chapter 7 test.